

reservoir used, the method of antireflux protection and the continence mechanism. Such names as Kock, Camey, Mainz and Mitrofanoff have been used to identify some of the more commonly done procedures.

The Kock pouch is the most desirable continent diversion because the pressure within the created reservoir remains extremely low, even with volumes of as much as 1,000 ml, and there are no pressure spikes from bowel smooth muscle contraction (a frequent cause of incontinence in other types of continent diversions). Intussuscepted small bowel afferent and efferent one-way nipple valves prevent urine reflux to the kidneys and urine leaking from the pouch. If these valves are not competent, revision may be necessary, though revision rates are decreasing as technical innovations are perfected.

For those patients whose general condition and prognosis permit them to consider the aesthetic and body image advantages of a continent urinary diversion, the Kock pouch appears to be an attractive alternative.

STUART D. BOYD, MD
Los Angeles

REFERENCES

- Boyd SD, Skinner DG, Lieskovsky G: The continent ileal reservoir (Kock pouch). *Semin Urol* 1987 Feb; 5:15-27
- Kock NG, Nilson AE, Nilsson LO, et al: Urinary diversion via a continent ileal reservoir: Clinical results in 12 patients. *J Urol* 1982 Sep; 128:469-475
- Olsson CA: Continent urinary diversion (Editorial). *Semin Urol* 1987 Feb; 5:1-2

Ureterorenoscopy

TRANSURETHRAL ENDOSCOPY of the upper urinary tract has become a routine part of most urologic practices. The technical advances of increasingly smaller rigid and flexible endoscopes with high-resolution lenses and channels sufficient for irrigation and the passage of diagnostic and therapeutic instruments have opened the door of nonincisional access to the upper urinary tract. It is obvious that the therapeutic options offered by direct visualization have had the greatest clinical impact. The options include stone extraction, catheter or stent passage and removal of foreign bodies.

Rigid transurethral ureteroscopy is done with instruments varying between 8.5 and 12.5 French. Following dilation of the ureterovesical junction, the ureteroscope is passed through the ureteral orifice and up the ureter under direct vision to the point of interest. Success rates for passage are above 95%, with failures due to anatomic limitations (ureteral angulation or fixation). The successful extraction of ureteral stones has improved dramatically. Initially only 60% of stones could be removed ureteroscopically, but now stones in the lower ureter can be removed in more than 90% of patients, and those in the upper ureter can be considered for removal. Ureteroscopic stone extraction or disintegration complements other forms of nonsurgical stone removal. Stones below the rim of the bony pelvis cannot routinely be treated with current extracorporeal shock-wave lithotripsy or percutaneous methods. But this region, the most common site for ureteral stones to lodge, is ideally located for ureteroscopic access. When a stone is large or resists extraction, transureteroscopic lithotripsy (stone fragmentation) by ultrasonic electrohydraulic or pulsed-dye laser can be done.

Flexible ureteroscopes, available for 25 years, have finally been perfected to a clinically useful state. Those that are not actively deflectable simply follow the ureter and thus are useful more for diagnostic than therapeutic indications. The deflectable flexible ureteroscope just now becoming commercially available promises more frequently successful access to

the upper urinary tract and the ability to visualize and obtain a biopsy of peripheral collecting system lesions and extract or disintegrate calyceal stones. Significant complication rates for those with experience have decreased to about 4% with less than 1% of those cases requiring an open surgical procedure. As with any new technique, a learning curve exists, and complication rates will diminish and success rates increase as a surgeon gains experience.

Transurethral ureteroscopic procedures (diagnostic and therapeutic) have become standard clinical practice and have saved many patients the morbidity of open surgical procedures to accomplish the same goal.

JEFFRY L. HUFFMAN, MD
Los Angeles

REFERENCES

- Biester R, Gillenwater JY: Complications following ureteroscopy. *J Urol* 1986; 136:380-382
- Huffman JL, Bagley DH, Lyon ES (Eds): *Ureteroscopy*. Philadelphia, WB Saunders, 1987
- Huffman JL, Bagley DH, Lyon ES, et al: Endoscopic diagnosis and treatment of upper tract urothelial tumors. *Cancer* 1985 Mar; 55:1422-1428
- Stackl W, Marberger M: Late sequelae of the management of ureteral calculi with the ureterorenoscope. *J Urol* 1986; 136:386-389

Integrated Management of Urinary Stone Disease

THE SIMPLICITY, efficacy and relative lack of morbidity of extracorporeal shock-wave lithotripsy (ESWL) in destroying kidney and ureteral stones have revolutionized "surgical" treatment methods since it was first introduced in 1980. Urologists now simply place patients in the treatment machine, aim the shock wave via the sighting cross hairs and destroy the stone in less than 50 minutes. Efficacy? More than 80% of patients are stone-free within three months, and fewer than 30% have any significant pain while passing the fragments. Perirenal hematoma, the worst complication noted to date, occurs in 1 of every 400 patients. There are very few other complications of significance. Hence, it is clear that ESWL functions remarkably well.

The success of this procedure and other relatively noninvasive stone-removal techniques (percutaneous nephrostolithotomy and transurethral ureteroscopic lithotripsy) have permitted the elimination of most stones without an open surgical procedure.

Each of these procedures has specific areas of strength where its use is preferable. ESWL is most effective for renal stones, but can be used for ureteral stones above the sacroiliac joint if there is enough fluid around them to transmit the shock wave and permit fragmentation, or if they can be pushed back up into the kidney for disintegration. Percutaneous nephrostolithotomy is used to debulk staghorn stones, to remove those poorly fragmented by ESWL because of hardness (cystine) and to eliminate stones in poorly draining calyces (dependent, or with narrow infundibulae). Transurethral ureteroscopic lithotripsy is addressed in another of this series of epitomes.

Does this mean we need not worry about preventing renal stone disease? Hardly! Even with these new treatment methods, there can be renal compromise from the stone, from the treatment or from complications of either, and it is certain that a kidney will occasionally be irrevocably damaged.

In view of this, it is important that we prevent recurrences whenever possible. Nearly 80% of patients with stones have a definite metabolic abnormality that can be identified and treated. Diseases such as hyperabsorption or renal leak hypercalciuria, hypomagnesiuria, hypocitruria and so forth re-

spond to treatment in more than 80% of patients—the same rate of stone prevention as is the success rate of the newer methods of surgical treatment of stone.

After a three-month recovery period, the patient has a metabolic evaluation and a preventive program is prescribed that may include increased fluids, dietary advice or drug therapy (or all of these).

While ESWL and the endourologic procedures represent “miracles” of medical technology that significantly reduce morbidity, prevention that avoids morbidity altogether is clearly the best for patients.

GEORGE W. DRACH, MD
Tucson

REFERENCES

Drach GW: Urinary lithiasis. In Walsh PC, Gittes RS, Perlmutter AD, et al (Eds): *Campbell's Urology*, 5th Ed. Philadelphia, WB Saunders, 1986, pp 1093-1190

Drach GW, Dretler S, Fair W, et al: Report of the United States Cooperative Study of Extracorporeal Shock Wave Lithotripsy. *J Urol* 1986 Jun; 135:1127-1133

Preminger GM, Peterson R, Peters PC, et al: The current role of medical treatment of nephrolithiasis: The impact of improved techniques of stone removal. *J Urol* 1985 Jul; 134:6-10

Recent Advances in Diagnosing and Treating Prostatic Carcinoma

PROSTATIC CARCINOMA, the third leading cause of cancer death in men, is completely silent when confined to the prostate. Disappointingly, only 5% to 10% are identified—by digital rectal examination or prostatectomy for obstruction—while curable.

An exciting new technology, transrectal ultrasonography of the prostate, holds the promise of identifying nonpalpable prostate cancer, and ultrasound-guided needle biopsy assures sampling from a suspicious area.

Autopsies of a large number of men who died from other causes have shown silent, unsuspected prostate cancer in 30% of men in their 50s, 35% in their 60s and 70% in their 70s.

With this high incidence, it is clear that much more sensitive screening methods are mandatory if we are to identify many more while potentially curable.

Total prostatectomy remains the treatment of choice for curable prostate cancer because survival exceeds that with external beam or interstitial irradiation and approximates normal age-corrected life expectancy.

The development of a nerve-sparing operation that preserves potency in 70% of patients has, along with the availability of successful penile prostheses, practically eliminated impotence as a major drawback of surgical treatment. Pelvic lymphadenectomy is done initially for staging purposes (no therapeutic value has been shown). If rapid frozen section shows metastasis to nodes, surgical cure is impossible and total prostatectomy is aborted.

Serum prostate-specific antigen is a newly identified, more accurate tumor marker for monitoring tumor burden. Both prostate-specific antigen and serum prostatic acid phosphatase emanate from the prostate cell, so they are a function of neoplastic quantity (not location).

But neoplastic cells that severely dedifferentiate may be unable to produce acid phosphatase, resulting in a spuriously low prostatic acid phosphatase level even with extensive tumor burden. Prostate-specific antigen, generally less affected by dedifferentiation, promises to more accurately reflect the quantity of neoplastic cells. Unfortunately, levels can be elevated in some benign conditions, such as benign prostatic hypertrophy and prostatitis.

Two new permutations of antiandrogen treatment are now

available. Leuprolide acetate (Lupron), a luteinizing hormone-releasing hormone agonist, produces “medical orchiectomy” by eliminating luteinizing hormone release, which secondarily eliminates testicular androgen production while preserving the testicles for those who wish to retain them for psychological reasons, and it avoids the increased thromboembolic and cardiovascular complications of estrogen therapy. Drawbacks of leuprolide therapy include its cost (more than \$270 a month) and the necessity that it be given subcutaneously by daily injections.

Ketoconazole (Nizoral), the oral anti-*Candida* agent, has been found in higher doses to block cholesterol uptake into the hormone metabolic cycle, resulting in a substantial reduction of androgen and androgen precursors. A dose of 400 mg given three to four times a day suppresses total and free testosterone to far below anorchidic levels and frequently in our patients has elicited an additional substantial remission. The dose can be titrated against testosterone levels, and the occasional case of gastrointestinal intolerance can be controlled with anti-nausea agents given shortly before the ketoconazole.

ARTHUR L. DICK, MD
Los Angeles

REFERENCES

Franks LM: Latent carcinoma of the prostate. *J Pathol Bacteriol* 1954; 68:603-616

Lee F, Gray JM, McLeary RD, et al: Transrectal ultrasound in the diagnosis of prostate cancer: Location, echogenicity, histopathology and staging the prostate. *Prostate* 1985; 7:117-129

Trachtenberg J: Ketoconazole therapy in advanced prostatic cancer. *J Urol* 1984 Jul; 132:61-63

Lasers in Urology

CERTAIN INDICATIONS for using lasers in urology have emerged, whereas areas have been identified in which lasers appear to offer no advantages over alternative treatment. Both carbon dioxide and neodymium-YAG (yttrium-aluminum-garnet) lasers have provided excellent therapeutic and cosmetic results in the treatment of condylomata acuminata of the external genitalia. A neodymium-YAG laser can be used effectively against selected squamous cell carcinomas of the penis, and its use may avoid the need for partial penectomy in some patients. Some of the early promise that lasers showed in the treatment of urethral strictures has not been realized. Also, the currently available wavelengths have not been of benefit in treating prostatic hypertrophy.

Neodymium-YAG laser treatment continues to offer some practical advantages over electrocautery resection in the treatment of superficial bladder cancer. Flexible instruments can be used, bleeding is not encountered, Foley catheters are not used and anesthesia is not necessary in most patients. The impact of lasers on the recurrence rate of superficial bladder cancer remains uncertain.

Minimally invasive bladder cancer can be eradicated through transmural necrosis produced by a neodymium-YAG laser but results in tumors that invade the deep muscle of the bladder are relatively unimpressive. Currently, the use of lasers should not be considered an alternative to doing cystectomy, but may be useful in patients who are not candidates for a radical operation because of advanced age or poor health.

Experience with lasers in treating lesions of the upper urinary tract through ureteroscopes or the percutaneous route is limited. Lasers have been used to extend the margins of resection after a partial nephrectomy for hypernephroma.

A pulsed-dye laser has recently been approved by the Food and Drug Administration for transurethral uretero-